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LETTER REGARDING REGULATORY REVIEW AND COMMENTS ON DRAFT PROPOSED PLAN AT SITE 8 NETC NEWPORT RI
5/25/2012
RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

25 May 2012

Ms. Maritza Montegross
NAVFAC MIDLANT (Code OPTE3)
Environmental Restoration
Building Z 144, Room 109
9742 Maryland Avenue
Norfolk, VA 23511-3095

RE: Draft Proposed Plan
NUSC Disposal Area (Site 08)
NSN, Newport, Rhode Island

Dear Ms. Montegross:

The Office of Waste Management at the Rhode Island Department of Environmental Management has conducted a review of the *Draft Proposed Plan* dated April 2012 for Site 08 - Naval Undersea Systems Center (NUSC) Disposal Area, Naval Station Newport, located in Newport, Rhode Island. As a result of this review, this Office has generated the attached comments on the *Draft Proposed Plan.*

If you have any questions, in regards to this letter, please contact me at (401) 222-2797, extension 7020 or by e-mail at pamela.crump@dem.ri.gov.

Sincerely,

Pamela E. Crump, Sanitary Engineer
Office of Waste Management

cc: Matthew DeStefano, RIDEM
Richard Gottlieb, RIDEM
Gary Jablonski, RIDEM
Ginny Lombardo, USEPA Region I
Ken Munney, USF&W
Deb Moore, NETC, Newport, RI
Jim Ropp, Tetra Tech

RIDEM Comments (5/25/12) on the
Draft Proposed Plan (4/30/12) for
Site 08 – NUSC Disposal Area
NSN, Newport, RI

General Comments:

1. Spatial Extent and Nature of Proposed Remedy for Soil

The selected remedy (SO3) seems appropriate, as targeted soil excavation and addition of a soil cover is proposed for most areas identified as locations that exceed industrial PRGs. However, additional sampling in some areas that are proximate to locations proposed to be covered are warranted to adequately delineate the limits of excavation. For example, soil sample SB153 has elevated concentrations of PAHs, PCBs, pesticides, arsenic, etc. Figure 4-2 of the FS indicates that this location is proposed to be excavated. However, the lateral extent of the high concentrations does not appear to have been fully delineated (there is only one soil sample from the area, as shown on Figure 1-8). Please provide additional delineation of the lateral extent of COCs in this area via confirmation sampling following excavation. Further, this section of the site contains numerous debris piles. This area needs to be fully investigated and would be subjected to the same remedial requirements, (i.e. removal/ capping) if any contamination above PRGs were to be found.

2. Protectiveness of Soil PRGs – Exposure Scenarios

Section 2.2 of the FS states that PRGs were calculated for a number of exposure scenarios, but final PRGs were based on either industrial or residential scenarios. Because the proposed alternative SO3 is based on targeting areas with industrial PRG exceedances, and there is the potential for trespassers to encounter contaminated soils, could there be some areas of the Site that will not receive treatment but could potentially pose a risk to trespassers? For transparency, please provide clarification on whether the industrial soil PRGs are also protective of exposures for the adolescent trespasser scenario.

3. Viability of Bioremediation

Based on our review of the available data, it appears that geochemical conditions are not immediately favorable to anaerobic bioremediation in the North Meadow Area where TCE impacts to groundwater are greatest. For example, in March 2011, the three wells with the highest TCE detections (MW-128B, MW-118B, and MW-03B) were non-detect for vinyl chloride and had either non-detections or low-level detections of cis-1,2-dichloroethene. In addition, the ORP values measured at the time of sampling were above +150 mV at all three wells, consistent with the observation in the March 2011 groundwater sampling event report that "wells in the North Meadow tended to have higher DO and positive ORP readings." Based on the above lines of evidence, it seems as though a considerable effort would be required to manipulate the redox state and completely engineer the bioremediation chemistry. For example, sufficient electron donor would be required to

deplete all terminal electron acceptors preceding carbon dioxide to create the methanogenic conditions favorable to dechlorinators. In addition, the absence of vinyl chloride detections at these wells suggests that dechlorinating populations may not be established, meaning that bioaugmentation may also be required. In these areas, replacement of bioremediation with in-situ chemical oxidation (ISCO) should be considered.

In contrast to the above analysis, the current geochemistry in the Building 179 Source Area (MW-07B) and the Building 185/South Meadow Area (where 1,1,1-TCA is the predominant CVOC) appears better suited to the selected remedy. Reducing conditions are more widespread in these areas, consistent with higher levels of chlorinated ethane daughter products such as 1,1-DCA, and the higher levels of chloride. Enhancing the intrinsic bioremediation processes occurring in these areas is a more viable option than engineering reductive dechlorination in the aerobic North Meadow Area.

4. ISCO Alternative GW4

The primary ISCO technology evaluated in the FS and referenced in the Draft April 2012 Proposed Plan is Fenton's Reagent (hydrogen peroxide and iron catalyst). However, page 3-26 of the May 2012 Draft Final FS states:

"Pilot tests to select a reagent might also be required, although because of the relatively low TCE concentrations, potassium permanganate would likely be used."

It is not immediately clear why Fenton's Reagent was selected over potassium or sodium permanganate for ISCO Alternative GW4. The ability of permanganate to oxidize chlorinated ethenes has been widely demonstrated in the field, including at comparable, operational sites in Rhode Island. In addition, the stability and persistence of permanganate in the subsurface make it a better choice for fractured rock applications with uncertain fracture/matrix interactions and migration pathways. It is noted that chlorinated ethanes are recalcitrant to permanganate; however, activated persulfate is an alternative, proven ISCO reagent that provides trichloroethane (TCA) coverage while offering more stability than Fenton's Reagent. Additional consideration should be given to permanganate and/or activated persulfate for source area remediation at the Site. This is particularly salient as the safety of site workers was cited as key differentiator between ISCO and bioremediation. In general, permanganate and activated persulfate do not result in unsafe gas and heat evolution, which is correctly noted as a safety hazard for unstabilized Fenton's Reagent. It is recommended that these reagents be strongly considered at the site in lieu of Fenton's Reagent and a more detailed explanation be added to the Final FS regarding the selection process of the ISCO reagent.

5. Segregation of Remediation Areas & ROD Flexibility

As described in General Comment #4 mentioned above, the North Meadow Area and the collective Building 179/Building 185/South Meadow Area have different CVOC profiles and geochemical conditions. In addition, these areas appear hydrogeologically separated

by the Unnamed Stream, and are likely to have varying hydrogeological responses to injected amendments. As a result, we believe it prudent to separate the source remedy selection so that different technologies may be used in the two areas. Pre-Design studies for each area may be used to determine whether ISCO or bioremediation is the preferred alternative. In this manner, the selected remedy for each area could better match the current geochemistry, and reasonable performance and cost expectations for the source remediation can be developed.

As discussed during the RPM meeting on May 16, 2012, one potential way to accommodate this comment is to build flexibility into the ROD such that alternative GW3 and/or GW4 may be used depending on the outcome of Pre-Design studies. The Final FS can potentially incorporate the consideration of other ISCO reagents (permanganate or persulfate, see General Comment #5 mentioned above) by simply listing them as options in addition to Fenton's Reagent for alternative GW4. It is noted that switching to ISCO after performing pilot or full-scale vegetable oil injections is not a preferred sequence because of the resulting increase in oxidant demand. Up-front, Pre-Design comparison of the two technologies through bench-scale treatability testing is a better strategy.

6. MNA Parameter Analysis

Regarding the 2012 work plan for supplemental MNA sampling, RIDEM feels the Navy should classify groundwater redox processes in groundwater using the USGS spreadsheet program available at http://pubs.usgs.gov/of/2009/1004/. This program classifies the overall redox category (i.e., aerobic or anoxic) and the specific redox process (i.e., nitrate-reducing or sulfate-reducing) based on electron acceptor concentrations. It appears as though all required analytes for the USGS analysis are on the monitoring list with the potential exception of dissolved manganese. If not included on the TAL metals list, please add dissolved manganese to the sampling list so that the USGS spreadsheet can be used in future MNA analyses. Also, please analyze for dissolved organic carbon at some of the locations to compare with the total values.

7. Spatial Extent of Remedy

Figure 2-7 of the FS outlines areas with groundwater concentrations exceeding PRGs. Figure 5-1 of the FS highlights wells that were selected for treatment. Several wells located in the areas exceeding PRGs were not selected for treatment (e.g., MW127B, MW108B, MW102B, MW130B, MW124B, and MW129B). Please include these wells for treatment or justify their exclusion. If these wells are not to be treated, please indicate how long it will take, based on modeling, for these wells to reach remedial goals. Finally, it does not appear that the results of the previous geoprobe investigations were considered when selecting areas for active treatment downgradient of the Building 179 area. This information should be considered and if necessary additional treatment zones may be selected.

8. Protectiveness of Groundwater PRGs – Exposure Pathways

Section 2.2 of the FS indicates that groundwater PRGs reflect ingestion of groundwater and are based on either a risk-based value or, if available, a Maximum Contaminant Level (MCL). We understand that vapor intrusion was not considered in development of PRGs, because this pathway did not pose an unacceptable risk in the human health risk assessment (p. 1-33 of FS), and that there are no currently occupied buildings at the Site. However, this pathway is a viable future exposure pathway and may contribute to cumulative cancer risk, should Site buildings be routinely occupied. Please add to the LUCs appropriate measures to eliminate this pathway (e.g., reevaluation of vapor intrusion risk, post-remediation and prior to occupancy, and/or use of vapor barriers, sub-slab depressurization systems, etc.) or require vapor intrusion evaluation for any future development.

9. Pre-Design Investigation

Please include in this Proposed Plan a discussion of the Pre-Design Investigation which will include the following: sampling for metals to conduct SPLP tests to confirm that metals are not leaching into groundwater, pilot/bench studies to be conducted to determine the best groundwater treatment alternative for each area of the site, a microcosm study for all areas proposed for in-situ bioremediation, and further investigation/verification sampling in several areas of the site. RIDEM believes the following items require further investigation and were not completed during the Remedial Investigation stage:

- Geophysical study in the paved storage area; any discoveries of anomalies must be excavated at the same time as the other known anomalies.
- Investigation of an anomaly (drum) north of the paved area (NW corner), which was stopped due to health & safety concerns.
- Further investigation of the southern area with piles of debris. Depending upon the level of contamination found in debris piles, the piles should either be removed or capped.
- Investigation of the source of TCE and PCE in the North Meadow.
- Investigation of free product in monitoring well MW-100B west of Building 185.

Please be advised that as the floor drains in the Building 185 complex were either not investigated or were incompletely investigated under the CERCLA Program then these drains will have to be registered and/or closed out under the RIDEM UIC Program in the future.

Also, please be advised that there are a number of oil/water separators, discharge pipes and ASTs located in the Building 179 plume areas which were not investigated as part of the CERCLA process. These areas will have to be investigated under the Site Remediation Program and any discharges to surface waters will require regulation under RIDEM's Office of Water Resources.

Specific Comments on the Proposed Plan:

1. p. 1, *"The Proposed Cleanup"* box, Groundwater.

Please revise the groundwater remedy according to RIDEM's comments above.

2. p. 8, Soil Alternative SO3.

Please include a more detailed description of Soil Alternative SO3 (i.e., include Figures 4-2 and 4-3 from the FS, include a statement regarding the 2 feet of armor stone cover along the sloped areas). Also, please revise the last sentence to *"Soil exceeding leachability standards in selected areas would be excavated and disposed offsite."*

3. p. 8, Groundwater Alternative GW4.

Please revise GW4 to include the possible use of potassium or sodium permanganate or activated persulfate as possible chemical oxidants for In-Situ Chemical Oxidation based on RIDEM's comments above.

4. p. 9, Common Elements, 1st bullet.

Please revise the last sentence to state *"The Navy will collect additional samples during the Pre-Design Investigation to verify that metals in soil are not exceeding leachability standards."*

5. p. 9, Common Elements, 2nd bullet.

"The existing pavement over the storage areas by Building 185 will be retained to serve as a Waste Management Area."

The Navy must complete the geophysical study in the paved storage area and excavate any discovered anomalies at the same time as the other known anomalies. This can be conducted during the Remedial Design activities following the issuance of the ROD. Please delete this statement from this and any other section of this document and the Feasibility Study.

6. p. 9, Common Elements, 3rd bullet.

"Under Alternative SD4, the pond would not require a LUC because COCs would be removed." Land use controls should still be placed on the pond due to possible recontamination due to groundwater migration from upgradient areas.

7. p. 10, Preferred Action Alternatives, Groundwater.

Please update this section to include flexibility for the groundwater remedy as stated in RIDEM's comments above.

8. p. 11, After the Record of Decision.

Please include a statement regarding the Pre-Design Investigation which will be required prior to the Remedial Design for this Site.